

5 I CLAIM:

- 1 A method for making a plastic lens comprising
 - providing a front mold having a reflective, non-ultraviolet (UV) absorptive inner surface;
 - providing a back mold which is UV light transmissive;
 - 10 disposing the front mold and the back mold in a UV light transparent gasket, the gasket defining a lower inner edge for removably sealing the front mold to the gasket, the gasket further defining an upper inner edge for holding the back mold in a spaced apart relationship to the lower inner edge, the space between the upper and
 - 15 lower inner edges defining a lens forming cavity when the front mold and the back mold are positioned in the gasket;
 - the lower inner edge of the gasket extending in a radially inward direction around an inner surface of the gasket, the lower inner edge having an upper surface which is in a spaced apart relationship to
 - 20 the upper inner edge wherein the front mold is removably sealed within and is held in position in the gasket by the lower inner edge;
 - dispensing a predetermined quantity of a UV curable lens forming resin material in the lens forming cavity, the resin material comprising at least one a polymerizable material and at least one
 - 25 photoinitiator, which cure when exposed to UV light; and,
 - exposing the dispensed resin material in the lens forming cavity to a source of UV light for a predetermined length of time at a predetermined intensity to cure the resin material without the need for either cooling or the addition of heat to the resin material.

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2. The method of claim 1, in which the UV light passes through a diffusion member before the UV light passes through and cures the lens forming resin material.

5 3. The method of claim 2, in which the resin material in the lens forming cavity is rotated about an axis extending perpendicular to the plane of the lens during the curing of the lens forming resin material.

10 4. The method of claim 1, in which the front mold comprises a nickel material coated with a hard carbon surface.

5. The method of claim 1, in which the back mold comprises a transparent glass material.

15 6. The method of claim 1, in which the lens forming resin material is exposed to UV light for a period of two and a half minutes or less.

20 7. The method of claim 1, in which the gasket is removed, exposing the edge of the cured lens material and a force is applied at least a portion of an edge of the front and/or back molds to remove the lens from the front and back molds.

25 8. The method of claim 1, in which the photoinitiator comprises a mixture of bis(2,6-dimethoxybenzoyl)-2,4,4-trimethylpentyl phosphine oxide and 2-hydroxy-2-methyl-1-phenyl-propan-1-one.

9. The method of claim 1, in which the resin material further comprises at least one photochromatic dye material.

10. A polymerizable resin material comprising: i) a photoinitiator comprising a mixture of bis (2,6-dimethoxybenzoyl)-2,4,4-trimethylpentyl phosphine oxide and 2-hydroxy-2-methyl-1-phenyl-propan-1-one, and ii) a polymer material which, when exposed to UV light for a period of two and a half minutes or less, cures without need for either cooling or the addition of heat to the polymerizable resin material.

11. The polymerizable resin material of claim 10, wherein the polymer material comprises a monomer.

12. A polymerizable resin material comprising i) at least one photoinitiator comprising a mixture of bis(2,6-dimethoxybenzoyl)-2,4,4-trimethylpentyl phosphine oxide and 2-hydroxy-2-methyl-1-phenyl-propan-1-one, ii) at least one polymer material which, when exposed to UV light for a period of two and a half minutes or less, cures without need for either cooling or the addition of heat to the polymerizable resin material, and iii) at least one photochromatic dye.

13. An apparatus for making a plastic lens comprising
a front mold having a reflective, non UV absorptive inner surface;

a back mold which is UV light transmissive;
a UV light transparent gasket, the gasket having a lower inner edge for securing the front mold to the gasket and an upper inner edge in a spaced apart relationship to the lower inner edge for holding the back mold in a spaced apart relationship to the front mold, the spaced apart front mold and the back mold defining a lens forming cavity;

the lower inner edge of the gasket extending in a radially inward direction around an inner surface of the gasket, the lower inner

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edge having an upper surface which is in a spaced apart relationship to the upper inner edge wherein the front mold is removably sealed within and is held in position in the gasket by the lower inner edge;

5 a means for dispensing a predetermined quantity of a UV curable lens forming resin material in the cavity, the resin material comprising a mixture of a polymerizable material and a photoinitiator which mixture cures when exposed to UV light in less than about two and one half minutes; and,

10 a means for exposing the dispensed resin in the lens forming cavity to a source of UV light for a predetermined length of time at a predetermined intensity to cure the resin material without need for either cooling or the addition of heat to the resin material.

14. The apparatus of claim 13, wherein the UV light passes
15 through a diffusion member before the UV light passes through and cures the lens forming resin material.

15. The apparatus of claim 14, wherein a turn table rotates the resin material in the lens forming cavity about an axis extending
20 perpendicular to the plane of the lens during the curing of the lens forming resin material.

16. The apparatus of claim 13, wherein which the front mold comprises a nickel material coated with a hard carbon surface.

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17. The apparatus of claim 13, wherein which the back mold comprises a transparent glass material.

18. A gasket for use in making a plastic lens comprising a UV
30 light transparent gasket having (i) a lower inner edge , the lower inner

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edge extending in a radially inward direction around an inner surface of the gasket, the lower inner edge having an upper surface which is in a spaced apart relationship to the upper inner edge, the lower inner edge removably sealing a front mold to the gasket, the lower inner edge
5 holding the front mold in the gasket; and

(ii) an upper inner edge extending in a radially inward direction circumferentially around the inner surface, the upper inner edge having an annularly extending surface, the upper inner edge holding a back mold in a spaced apart relationship to the lower inner edge, the upper and
10 lower inner edges defining a substantially self-sealing lens forming cavity when the front mold and the back mold are removably secured in the gasket.

19. A front mold for use in making a plastic lens, the front mold
15 comprising a nickel material coated with a hard carbon surface.

20. A method for coating a substrate comprising coating the substrate in which UV light passes through a diffusion member before the UV light passes through and cures the photochromatic coated
20 substrate with at least one photochromatic composition and curing the photochromatic coated substrate by exposing the coated substrate to UV light without need for either cooling or the addition of heat to the coated substrate.

25 21. The method of claim 20, wherein the coated substrate is exposed to a source of UV light for a predetermined length of time at a predetermined intensity to cure the coating material.

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